

# Discussion Papers

# 1115

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Longitudinal Evidence from  
Ukraine's Orange Revolution**

Berlin, March 2011

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## IMPRESSUM

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ISSN print edition 1433-0210  
ISSN electronic edition 1619-4535

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# **Determinants of Protests: Longitudinal Evidence from Ukraine's Orange Revolution**

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We thank participants at the ESCIRRU Final Workshop (Economic and Social Consequences of Industrial Restructuring in Russia and Ukraine, a EU's 6th Framework Programme) held in Moscow in October 2009 for very useful discussions and participants at for helpful comments. We also thank Paul Gregory, Rajshri Jayaraman, Hartmut Lehmann, Alexander Muravyev, Vladimir Paniotto, and Climent Quintana-Domeque for helpful comments. Natalia Weishaar actively participated in the design and testing of the political participation module, on which most of this work is based. Last, but not least, Alexandra Avdeenko provided excellent research assistance.

## **Abstract**

This paper is the first study that analyzes the drivers of political protest using longitudinal data from a critical revolution that changed –at least temporarily- the political landscape in a transition country. We make use of a rich dataset consisting of panel data collected before and after the so called “Orange” revolution in Ukraine. Our empirical approach tackles two different –and equally interesting- features of the revolution: the determinants of participation (both in the protests and counter-protests) and the “selection” of participants into different levels of involvement (i.e. intensity of participation). We consider different drivers of participation, from traditional proxies for opportunities and grievances, but we also analyze the role of political and economic preferences, risk tolerance, life satisfaction, and indicators of network connectivity. What emerges from this study is a more nuanced pattern of participation that does not link uniquely to a single theoretical model.

JEL Classification: P20, D74

Keywords: conflict, protest, transition economy, Ukraine, longitudinal studies

## 1. Introduction

There is a widespread interest to understand the micro-processes of revolutionary mobilization and leadership. In the recent years, much of the literature has concentrated on understanding rebel recruitment (Weinstein 2007, Humpreys and Weinstein, 2008). There is also need to understand what drives protests that afflict poor countries but also transition economies with higher levels of income.

This is the first study that analyzes the drivers of political protest using longitudinal data from a critical uprising that changed –at least temporarily– the political landscape in a transition country. We make use of a rich dataset consisting of panel data collected before and after the so called “Orange” revolution in Ukraine.

This study focuses on Ukraine, a young democracy that experienced a dramatic transition from a collective to a market oriented economy. This transition was painful by economic accounts: the depth and duration of the economic contraction surpasses even statistics coming from the Great Depression. Political grievances, led by allegations of fraud, autocratic tendencies, and a lack of freedom of speech are indeed in the background of the so-called “Orange” revolution that occurred after the elections of 2004.

Our contribution to the literature on protests goes beyond the advantage of using of longitudinal data. The richness of our dataset allows us to understand not only drivers, but also different degrees of “activity” (intensity) of participants and protest dynamics. Moreover, we go further from the usual theoretical motives of participation, testing the role of risk tolerance and life satisfaction as additional drivers of participation.

Our empirical approach tackles two different –and equally interesting– features of the revolution: the determinants of participation, and the “selection” of participants into different levels of involvement. First, we consider protest and counter-protest participants, and find a different profile of participants on these groups. We find that “protestors” (“Orange revolutionaries”) counted on students, and involved individuals aligned on strong political preferences. Surprisingly, both in multivariate and bivariate analysis, protestors displayed high levels of life satisfaction. This is not counterintuitive given the context in which the protest occurred: individuals with high satisfaction may protest against what they consider

“unfair”, fueled by the perception that results of a decisive election were fraudulent. Counterrevolutionaries (“Blue”, aligned with the then ruling party) were more likely to have endured difficulties in the transition to a market economy: individuals in long-term unemployment were more likely to be part of this group. Our findings also suggest the necessity of coordination for these events to occur: protests were more likely to occur in densely populated areas, and in individuals more likely to have access to networks (proxied by having access to internet, mobile or land line phone). Also, public employees were more likely to participate in counterdemonstrations than the average citizen. What protestors and counter-protestors had in common is a low level of risk aversion, which is consistent with perceptions that participating is less “risky” than not participating.

Second, we divide participants (only in the Orange side) in two groups: “followers” and “organizers”, the latter being more “active” in the demonstrations than the former. Many interesting results emerge comparing these categories. Students are more likely to participate as “followers”, but this does not make them more likely to be “organizers” (in relation to non participants). Education does not significantly increase the chances of being “followers”, but does increase the chances of being “organizers”. Women are as likely as men to be “followers”, but they are substantially less likely to participate as “organizers”. Finally, political preferences increase the chances of being “follower” and “organizers”, but its effect is stronger for organizers. In sum, women and students appear to be driving those engaging in moderate participation, whereas to be “organizer” requires political motivation and higher levels of education. What emerges from this study is a more nuanced pattern of participation that does not link uniquely to a single theoretical model.

The paper is organized as follows: section 2 provides basic details about the context in which the protests occurred. Section 3 outlines a basic conceptual framework to integrate the context in a broader theoretical and empirical perspective. Section 4 describes the findings and problematic of empirical studies dealing with collective action in the form of protests. Section 5 presents the main results. Finally, section 6 concludes.

## **2. The case of Ukraine**

### *Why study Ukraine?*

There are many reasons that make Ukraine a unique setting for analyzing protest behavior. First, although not a poor country, Ukraine experienced a long-lasting influence from the USSR, and after the demise of the soviet bloc it experienced a protracted period of economic depression that surpasses in comparison statistics from the Great Depression. In fact, even in comparison with other Eastern European transition countries, Ukraine had a very difficult period of transformation. The Ukrainian economy experienced 10 consecutive years of output decline in the 1990s: by year 2000, the Ukrainian real GDP represented only 43% of its level in 1990. The labor market responded to this adjustment with a sharp contraction in real wages and a large incidence of wage arrears and (unpaid) forced leave (Brück et al. 2008). In addition to this, between 1991 and 1994 the country experienced a severe episode hyperinflation that eroded the value of household savings in real terms. All these factors may have led to discontent in a large proportion of the population.

Second, Ukraine is still a young democracy, and its political leaders have been criticized by opponents for corruption and for concentrating political power. In fact, as in other former territories of the USSR, Ukraine underwent a difficult political transition to capitalism and democracy. This path was not free of political protest. In particular, since the turn of the century the so-called “colored” revolutions have occurred in other CIS countries (Belarus, Georgia, and Kyrgyzstan) besides Ukraine. These protests aimed at changing political leadership and to demand transparent elections and free press, and raise the question of whether the sources of discontent were of political, rather than economic nature.

Third, the country displays clear regional differences. For instance, the Western part of the country is more wary of establishing close relations with Russia and displays a strong Ukrainian nationalistic identification, whereas the East welcomes Russian influence in economic, political and cultural terms. A similar division in language and identity is clear between these two regions and correlates with strong polarization in electoral results.

In Central and Southern regions (and Kiev, the capital) such contrasts are less evident. Thus, we investigate to what extent the emergence of protests correlates with cultural and ethnic differences.

### *The Orange revolution*

Ukraine has a multi-party political system. Presidential elections, which are held every 5 years, took place in 2004. Two main candidates gained majority approval: Viktor Yushchenko, leaning towards EU/US and NATO, and Viktor Yanukovich (an incumbent, at that time Prime Minister), leaning towards Russia. In the first election, no candidate reached the majority of votes, so according to electoral rules, a run-off vote between Yushchenko and Yanukovich was scheduled for November 21<sup>st</sup>, 2004. In contradiction with exit-polls (which assigned Yushchenko a lead by about 11% margin), the official results gave the win to Yanukovich by 3% margin. Peaceful protests occurred almost immediately, grounded on allegations of electoral fraud. Some of these protests drew a substantial number of participants: in Kiev, 500000 participants gathered on November 23<sup>rd</sup> to march in front of the Parliament. In Central and Western Ukraine, protests in favor of Yushchenko were common in urban centers, but in Eastern Ukraine counter demonstrations were held in favor of Yanukovich. Both types of demonstrations also converged towards Kiev, although “Orange” supporters (Yushchenko) outnumbered participants in Yanukovich “Blue” side.

The Supreme Court intervened, and ordered a re-run of vote for December 26<sup>th</sup>, which was closely monitored by international electoral authorities. In this third election, Yushchenko was elected new president by 52% of votes. This brought an end to the “Orange Revolution”.

### **3. Conceptual Framework**

Social unrest is quite a common phenomenon in developing countries. The International Peace Research Institute (PRIO) has documented 3375 politically motivated events of social disorder in cities of Asia and Africa in the last 4 decades (Urdal, 2008). The occurrence of this events is in conflict with Olson’s seminal contribution (Olson, 1971), which suggests that coordination problems may prevent collective action from occurring, “unless the number of individuals in a group is quite small, or unless there is coercion or some other special device to make individuals act in their common interest” (Olson 1971: 1-2). The essence of Olson’s argument is that there is a “free-rider” problem that deters rational individuals from participating. This theoretical result is not surprising if the consequences of a revolution are considered a “public good” (Tullock, 1971), and hence liable to “underprovision” problems. The gap between Olson’s skeletal model predictions and the empirical observation (where revolutions and other forms of social unrest do occur) was subsequently reduced by relaxing Olson’s assumptions. Many extensions to Olson’s model have been suggested (for a survey



article, see Moore, 1995). Instead of detailing all theoretical extensions, which would exceed the scope of this paper, we briefly sketch the main theoretical lines that have been proposed to explain the occurrence of collective action phenomena. In the remainder of this section, we put particular emphasis in linking theoretical factors with testable empirical predictions, considering potential empirical correlates (“drivers”) of participation.

From a theoretical standpoint, the central problem facing an agent deciding to join a popular protest is to compare costs and benefits of joining (or not), which may be of economic or psychological nature. That is, there are different factors that may incentive (disincentive) an individual’s decision to join (not to join) a protest. In order to structure the presentation, we divide these incentives in different categories. In particular, following the recent literature on the determinants of civil conflict (Collier and Hoeffler, 2004), we propose the following characterization along three categories: greed, grievance and group motives. (A similar structure is provided by Humphreys and Weinstein, 2008). This differentiation helps to contrast different hypothesis and mechanisms lying behind the decision to participate in a protest, but does not imply a simple mapping of circumstances occurring in violent conflict regions with those occurring in Ukraine in 2004.

### Greed

Our first category, greed, comprises material incentives that deter or incentive participation (Tullock, 1971). Examples of these are rewards from looting or sanctions to participants, for instance job loss or expropriation. A key challenge in assessing the relevance of greed motives is to match theoretical concepts with their empirical counterpart. In the Ukrainian case, we use two main sets of variables of interest that proxy for material sanctions or benefits linked to participation. The first set includes variables describing employment status, which matter for two reasons: opportunity costs and risks of being fired. First, other things equal, employed individuals may not have sufficient time to contribute to protests with their presence in public demonstrations because being employed may constrain the number of hours available for alternative activities. The variable *worked*, defined Table 1 serves as a proxy for this purpose. Second, participating in protests against *status quo* may carry high risks for specific types of jobs. For example, public employees (variable *emppublic* in Table 1) may avoid participating in a rebellion because of the risk of being fired if the revolution fails<sup>1</sup>. The second set of variables includes an indicator of property ownership (in our case

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<sup>1</sup> This could work in the opposite way, too, but only if the chances of the revolution being successful are high.

proxied by variables that signal property holdings: owning a house, *ownshouse*; and owning additional property besides the main place of residence, *ownsmore*). Owners, especially those holding substantial amounts of wealth, may be deterred from participating in protests because of the risk of expropriation, although this may not hold in the case of Ukraine.

### Grievance

This category encompasses different sources of discontent or frustration that propel participation. These factors could be economic, political, ethnic or religious in nature. In our case, we capture economic sources of grievance by using information about the poverty status of the household. This goes in line with absolute deprivation theories that suggest that rebellions are (at least partly) driven by poverty. Because participation could be non-monotonic on the degree of poverty, we use two poverty thresholds to create alternative poverty categories: poor (captured by the indicator *poorpr*) and food poor (*poorfr*).

Through a detailed retrospective questionnaire, we are also able to identify other causes of economic grievances, such as employment difficulties during the transition (*jobslost8697*), fraction of time unemployed in the period 1998/2004 (*fracunemp9804*), and job-related problems (wage arrears, being on forced leave or unemployed) in the previous year, for the individual (*jobprobl12M*) or for at least one member in the household (*jobprobl12Mhh*). Poor labor market outcomes in the past may build feelings of frustrations that make individuals more likely to protest. This categorization is not completely free of problems: being unemployed could signal reduced opportunity costs, which would fall under the “greed” category. The temporal dimension may help to solve this problem: current employment status is more likely to reflect opportunity costs than grievances, whereas chronic employment problems are more likely to reflect deep-seated sources of discontent. Notice that our proxies of economic sources of grievance are related to the individual (or their household), and are not group-based. We measure political grievances indirectly by using indicators for political (*westdem*, *soviet*) and economic preferences (*suitcentral*, *suitmarket*), as described in detail on Table 1. These preferences do not capture discontent per se, but can become grievances when the *status quo* openly challenges individual preferences. Given the ideology of Yushenko and Yanukovych followers, we expect that individuals leaning towards EU/UE and favouring market oriented policies are more likely to participate for the “Orange” side. Supporters of centralized economy and leaning toward Russia would be more likely to participate for the “Blue” side. It is important to underline that grievance factors need to be grounded in some

state of discontent (or gap between expectations and actual rewards). Different factors that we have described above (e.g. unemployment) may proxy for discontent, but it is difficult to identify them as clear-cut candidates for grievances, since they may also proxy for greed motives (opportunity costs may be lower). We do not have a direct measure of discontent on political terms, such as an indicator of being alienated from the political debate. We have instead an indicator of life satisfaction (*lifesatplus*), but the predicted sign of this is unclear since it is a diffuse term that may not necessarily signal the need to bring political and social change.

### Groups

Individuals may also join a protest because they feel strongly identified or desire to conform to social, ethnic or religious groups to which they pertain. That is, regardless of their individual reasons for participation (e.g. being poor, feeling alienated from the political process), they feel strongly identified with a social group and use protest (or abstaining from protest) as a way to “conform” to norms or expectations advocated by reference group. For this purpose we use an indicator that Ukrainian is the preferred language (*ukrainian*).

Finally, because participation may be less likely if coordination among individuals fail, we use proxies for social connections. We construct an index of social exchange based on information on gifts/money received and/or given to/from others, including relatives, friends or organizations. This is a crude measure of social connections, but it is one of the few measures that can be constructed from ULMS data. We have also used other indicators of connectivity (access to internet, having a cell-land line telephone), but these may also proxy for socioeconomic status, so that their effect may be partly confounded.

### Other hypotheses of interest

This sub-section describes other variables of interest that do not pertain to the three categories mentioned before, but that are of interest as a potential driver of participation. These hypotheses have not been tested in the literature and constitute a clear research gap that is worth exploring given the richness of richness of the ULMS longitudinal dataset.

First, it is possible that attitudes towards risk are an important factor driving individual participation. On the one hand, the uncertainty linked to participation may deter individuals with high risk aversion from participating (Snijders & Raub, 1998). On the other, not participating may also have associated risks and thus individuals may choose to participate in

revolts. Thus the sign will depend on which action is more “risky” (joining or not joining). The theoretical argument goes as follows: for an individual with constant absolute risk aversion utility (CARA) and with payoffs from actions (joining-not joining) that are normally distributed. Assume joining a protest has a stochastic return (reward)  $J$  that is normally distributed with mean  $\mu_J$  and variance  $\sigma_J^2$ . If the individual has a CARA utility  $u(x)=-\exp(-\alpha x)$ , then  $EU(\text{Joining}) = \mu_J - \frac{\alpha \sigma_J^2}{2}$ . Assume that the person does not join,  $NJ$ , and that not joining has a stochastic return  $NJ$  that is normally distributed with mean  $\mu_{NJ}$  and variance  $\sigma_{NJ}^2$ , which yields  $EU(\text{Not Joining}) = \mu_{NJ} - \frac{\alpha \sigma_{NJ}^2}{2}$ . The person joins the revolution if

$$EU(\text{Joining}) = \mu_J - \frac{\alpha \sigma_J^2}{2} > EU(\text{Not Joining}) = \mu_{NJ} - \frac{\alpha \sigma_{NJ}^2}{2} \Rightarrow \mu_J - \mu_{NJ} - \frac{\alpha}{2}(\sigma_J^2 - \sigma_{NJ}^2) > 0.$$

We are interested to what happens to this expression as (absolute) risk aversion  $\alpha$  increases.

$$\frac{\partial \left[ (\mu_J - \mu_{NJ}) - \frac{\alpha}{2}(\sigma_J^2 - \sigma_{NJ}^2) \right]}{\partial \alpha} = -\frac{(\sigma_J^2 - \sigma_{NJ}^2)}{2}. \text{ This is negative only if } \sigma_J^2 > \sigma_{NJ}^2, \text{ that is,}$$

participation will be decreasing in risk aversion when joining the protest is more “risky” (in Arrow-Pratt’s relative risk aversion sense) than not joining. To evaluate the impact of risk aversion on participation, we use an index of risk aversion (see Appendix 1 for more details) that is constructed from choosing “lotteries” with increasing risk aversion.

Second, we would like to know the role of potential social deterrence factors at the local level. For this purpose, we use electoral results as an indicator of political sentiment at the regional level. The argument behind this is that, other things equal, a would-be “Orange” protester would be less likely to participate in a “Blue” region. The sanctions that we allude to may be diverse. First, one would expect less “Orange” participants in a “Blue” region, which would by itself reduce the propensity to participate because the expectation of “local” success would be minimal. This argument goes in line with collective rationality (Finkel & Muller, 1998) and with “tipping point” models (Schelling 1985; D’Anieri 2006; Chong 1991; Lohmann 1992). Second, less participants increases the chances that the protest will be controlled by the state, because the ratio of state control agents (police, military) to participants might be higher in regions where there is low expected turnout for the “Orange” side. This last argument is weakened if the regional distribution of state control forces is endogenous to discontent: “Orange” regions may have a higher degree of state control because they were considered more likely to harbour revolts.

In addition to these variables, we also make use of the following controls: age (*age*), gender (*female*), educational categories (*primedu*, *gensec*, *profsec*, *highered*), and geographic indicators (*town/city* as a proxy for population density, which could also capture variation in unobserved network sizes), and West/East/South/Kiev/Center for geographic regions), household size (*hhsz*), and the share of working age adults in the household (name, women ages 15-55, men ages 15-60) as a proxy for household composition (*workageshare*).

#### 4. Related literature

Eliciting the determinants of collective action is a difficult task, for different reasons. This is evident in the shortcomings that plague most of the empirical literature on this topic. First, in many studies participants are asked *ex post* about their reasons for participation (e.g. Opp, 1994). This approach can yield biased results, as *ex post* respondents may give socially acceptable answers when probed about motives of participation. *Ex post* “rationalizations” (Finkel and Müller, 1998: 38) can obscure the real motivations that were behind participation. In addition to this, *ex post* studies may result in confounding due to reverse causality. This is particularly likely because participating in collective action can notably change attitudes and economic outcomes. Second, analysing the willingness or intention to revolt (derived from attitudinal surveys) can lead to highly speculative results (e.g. MacCulloch, 2002). The reason for this is that stated attitudes in response to a hypothetical situation can significantly differ from observed behaviour (Lober, 1995). These two shortcomings are related to cross-sectional data, where information is either collected before (or alluding to a hypothetical event) or after the occurrence of a revolution. Longitudinal datasets may be better suited for our empirical quest.

Few studies have used panel data to analyze determinants of protest. Finkel and Müller (1998) use a panel survey of 377 individuals in the former West Germany. Their data was collected between November 1987 and January 1988 and between October 1989 and January 1990. Although their survey items allow for a clean identification of drivers in the form of expected costs and benefits, their measure of participation is an index that encompasses different activities of political participation that vary in nature and severity, from wearing a “button or a sticker for a political cause” to “confrontations with police”, participation “in political activities that resulted in property damage” or “in a demonstration that broke the law”. This is done to maximize sample variation, but obscures motives determining intensity of participation (number of activities) from participation itself (whether

the person participated in at least one type of political protest). Unlike their paper, we use a larger sample size survey that allows us to analyze participation and intensity separately, thus obtaining a clearer perspective. In addition to this, we focus on participation in a revolutionary protest that occurred in a specific period of time.

Bäck et al (2004) study different modes of political participation (voting, party activity, and participation in manifestations) using panel data from Sweden (2 waves, 1997 and 1999). Most of their dependent variables are constructed as additive indexes (as in Finkel and Müller), and motivate the same comments raised before. Further, it is not clear from their results whether the low response rates and high frequency of attrition of the study were appropriately handled.

In sum, this is the first longitudinal study focusing on participation in a massive revolutionary protest.

## **5. Data**

We make use of data collected in the Ukrainian Longitudinal Monitoring Survey (ULMS), a nationally representative panel survey of households. There are three rounds of data collection undertaken in 2003 (April-July), 2004 (May-July), and 2007 (June-December). The sampling method used is multistage with probability proportional to size (Kiev International Institute of Sociology, KIIS, 2004), and contains high quality household and individual data. The household questionnaire contains information about income, expenditure, household composition and living conditions. The individual questionnaire focuses on labor market status, and this information has been explored in great detail because of the richness and quality of the dataset (Lehmann and Terrell, 2006). It also contains a detailed retrospective questionnaire that allows to assess employment conditions at specific points in time (December 1986, 1991 and 1997), and to derive a complete reconstruction of labor market histories since January 1998. The 2007 questionnaire includes a set of questions on risk attitudes and time preferences (Dohmen, Khamis, Lehman, 2009) and a subsection focusing on Presidential Elections in 2004. This subsection collected information about participation in the protests, including motives for joining (or refraining from) the protest, type of participation, timing, and ex-post assessment about the results of those protests.

## 6. Results

### Descriptive results

For the purposes of our study, “participation” is a self-constructed term where the individuals declare to have been involved in the events surrounding the 2004 Elections. Overall, participation rates as a proportion of the total population were low, about 6% and 1.1% for the “Orange” and “Blue” side respectively. The degree of involvement varies, but a large majority of participants reported having “attended meetings, gatherings or pickets”, or having “distributed information materials”. Table 2 divides participants in “Orange” and “Blue” groups and shows percentage of participants in that group that participated in a given type of activity. Overall, 50% of participants wore symbols and 71% attended meetings, gatherings and pickets. There are differences by groups: for example, Orange side participants were more likely than Blue side participants to wear symbols or to donate money to demonstrate support (e.g. ribbons, bows). “Blue” participants were more likely to be election observers or camping in public places (this may be the result of “Blue” protestors demonstrating in Kiev).

Figure 1 shows participation rates by side (Orange, Blue) and region. Higher participation rates for the “Orange” side were evident in Kiev and in the West, whereas participation rates for the “Blue” was higher in the East, where they outnumbered by far self declared “Orange” participants.

[Insert Figure 1 here]

Figure 2 presents participation rates by the share of “Blue” votes (Yanukovich) in the First Election (at Oblast level). The simple correlation coefficient between the share of “Blue” and “Orange” (Yuschenko) votes is -0.95, so that predominantly “Blue” regions are also low in “Orange” votes. As expected, participation in the “Orange” side is decreasing in the share of “Blue” votes, with most participation occurring in areas where the share of “Blue” is under 30%. Conversely, participation rates for the “Blue” side are bolstered in districts where the share of “Blue” votes exceeded 70%. As a consequence, there are Oblasts where participation rates are low: these are Oblasts where neither Yanukovich nor Yuschenko captured an overwhelming majority of ballots.

[Insert Figure 2 here]

Figure 3 presents participation rates (Orange, Blue side) by life satisfaction. No trend is clear for “Blue” participants, but participation rates are increasing in life satisfaction for the “Orange” group. Although a crude approximation to the link between life satisfaction and the desire to revolt, this suggests that using life satisfaction may not be a proxy of discontent.

[Insert Figure 3 here]

Next, we present two alternative representations for the relationship between risk tolerance (explicitly or implicitly assessed as described in Appendix 1) and participation. Figure 4 plots participation rates by the index of explicit risk tolerance, where individuals assess their willingness to take risks explicitly in a scale from 0 (no willingness to take risks) to 10 (completely willing to take risks). Individuals who are more willing to tolerate risks according to this index are more likely to participate in the “Orange” side, whereas no clear pattern is seen for those on the “Blue” side. Although a first approximation, this suggests that participants on the Orange side may have seen participation as a “riskier” endeavor (see footnote 2 for a sketch of the theoretical argument behind this assertion). Figure 5 indicates a less clear pattern for “Orange” participants. In this figure, risk tolerance is assessed implicitly by asking individuals to choose between sequential lotteries, ordered by decreasing levels of risk aversion. An indicator of 1 categorizes the individual among the most risk averse, whereas a 5 indicates the highest degree of risk tolerance detectable in the questionnaire.

[Insert Figures 4 and 5 here]

Before turning to regression results, we take a look at descriptive statistics disaggregated by participation status, to check if participants differ from non-participants in terms of observable characteristics. However, because differences may exist between “Orange” and “Blue” supporters (both being “participants” in a broad sense), we have divided individuals in 3 categories: non participants, participants for the “Blue” side, and participants for the “Orange” side.

Table 3 presents summary statistics by these three categories, as displayed in columns (1), (2), and (3). The fourth column tests for differences between non-participants and orange participants, providing the p-value of a t-test under the null of no difference between non-participants and “Orange” for a given characteristic. The fifth column contrasts the means of



non-participants and “Blue” participants in analogous fashion. The last column tests for differences between “Orange” and “Blue” participants.

[Insert Table 3 here]

Gender, unemployment rates and food poverty status are similar across the three groups. However, “Orange” participants are younger and more likely to be working or studying than are non-participants. Clearly, economic preferences are different between “Orange” and “Blue” participants, with those on the “Orange” side being more likely to support an economic system based on market incentives, as expected. Very interestingly, “Orange” participants are more likely to report being satisfied with life (this can also be seen from Figure 3). Their participation on the Orange side is not explained by being unsatisfied with their personal situation. Instead, their participation on the “Orange” side was galvanized because the threat that a “Blue” victory might have represented on their status. This suggests that they went to streets not because of they lacked, but because of what they might have lost had they not protested against rigged election results. Participants on both sides were more likely to have a job in the public sector than non-participants. Although though they make up a higher fraction of participants in the “Blue” side than in the “Orange” side, this difference is not statistically significant. “Technological connectivity” is strongly related to participating on the “Orange” side: they were more likely to have used internet, or had a telephone or mobile phone. Of course, part of this relation may be due to third factor (e.g. differences in cultural patterns or socioeconomic status) linking connectivity and participation, and this differentiation will only be clear using regression analysis. Household composition is also correlated with participation: lower dependency ratios (a higher fraction of members being of working age) are more evident among participants (either Orange or Blue) than among non-participants. Having less dependents may, *ceteris paribus*, free time from caring for children and old age individuals, increasing available time to be used in other activities, for example to participate in protests.

### Determinants of participation

The empirical approach that we use to identify determinants of participation relies on two elements. First, the longitudinal dimension allows us to explain participation (as reported in

the 2007 survey) with baseline characteristics (pre-Orange revolution)<sup>2</sup>. Second, because determinants of participation may be different between those in the “Blue” and “Orange” side, we use a multinomial logit estimation, for which the omitted category is not participating. Thus, the coefficients give information about which factors increase/decrease the likelihood that the person participates in a given “side” (Orange, Blue) with respect to non-participants. Table 4 is divided in two panels, each corresponding to one of the outcomes of the multinomial logit. The table reports relative risk ratios (RRR) with respect to the baseline category, so that variables that increase (decrease) the relative risk are those whose coefficient is greater (smaller) than 1.

[Insert Table 4 here]

Panel A reports relative risk estimates for participation on the “Orange” side. Column (1) represents a “core” model that correlates participation with basic characteristics. This includes usual demographic characteristics (age, education, location and household composition) as well an indicator that the person is a student (in the period 2003-04) and indicators that the person is unemployed or working. According to this baseline estimation (Column 1, Panel A), the relative risk of participating in the “Orange side” is higher for students and lower for unemployed individuals. Participation patterns and age are related through a (weak) inverted U-shape pattern (the rrr for age is higher than 1 but not significantly different from it). Those whose preferred language is Ukrainian have an increased chance of participating in the “Orange” side, as expected. Geographical patterns, either by population density (living in town or city, with omitted category living in a village) or by region (omitted category is East) reveal strong heterogeneity. Individuals in towns or cities are more likely to participate on the “Orange” side than those living in less densely populated areas, and individuals living in regions other than the Eastern part of the country have an increased chance of participating on the “Orange” side. Household composition indicators (share of pensioners and children) are not significant predictors of participation. At the bottom of panel A, we display basic statistics regarding sample size, pseudo R<sup>2</sup> and a calculated Bayesian Information Criterion index (BIC) to compare models across columns. In Column (2), we add to the baseline model two proxies for grievances: poverty status and fraction of time the person was unemployed in the period 1998-2004. Neither poverty nor the fraction of time being unemployed (1998-2004) are significant predictors of participation for the “Orange” side, although the fraction of time

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<sup>2</sup> The only exception are proxies for the degree of risk aversion, which are part of the 2007 questionnaire only.

being unemployed is borderline significant at 10% level. This result is not puzzling: long term unemployed may not be willing to support the “Orange” side, particularly if their long term unemployment is due to pro-market reforms advocated by Yushenko’s side.

In Column (3) we add to the basic model two indicators of problems in the labor market, as proxied by job-related problems in the last 12 months and the number of jobs lost in the last 20 years (considering jobs declared in a retrospective fashion for years 1986, 1991 and 1997). It is possible a difficult transition may not matter for participation as much as recent unemployment experiences (in column 2 proxied by fraction of time the person was unemployed in the period 1998-2004).

In Column (4) we observe that, as hinted in Table II, being a public employee does not increase the chance that the person participates on the “Orange” side.

In Column (5) we test the hypothesis that political and economic preferences are related to participation. As expected, individuals leaning towards the “West” were more likely to participate on the “Orange” side. In terms of the BIC, Column (5) displays the most satisfactory model of those shown in Table 4.

Column (6) introduces the share of votes at oblast level (and in the first round) that were reached by Yushenko (*or1*) and Yanukovych (*bl1*). It is interesting to notice that the addition of these two variables makes regional indicators (*Kiev, Center, West, South*) not significant. In other words, the regional divide in participation is wholly explained by political preferences (as proxied by share of votes in the first round). The proxies for population density (town, city, with village the omitted category) remain significant.

Column (7) shows that participation in the Orange side is more likely among individuals with high levels of life satisfaction and that are tolerant to risk (at least measured by the implicit risk index, explained in the Appendix).

Having a fixed telephone line appears to increase the probability of participating on the “Orange” side, as shown in Column (8). This could reflect a direct impact (individuals are more likely to be “connected”), but it could also reflect the role of a third factor not accounted for the basic controls shown in Column (1).

Panel B in Table 4 shows relative risks of participating on the “Blue” side. The salient characteristics displayed across all columns suggest that different determinants may be at play in this case. First, current unemployment doubles the risk of participation in the “Blue” group, although the statistical significant varies according to the specification. Long term unemployed, have, conversely, less chances of participating, as was true for the “Orange” side. This suggest that long term unemployed may represent a discouraged group, more than a

group emboldened by grievances due to long term unemployment. Second, public employees are more likely to participate for the “Blue” side. This could be a reflection that public employees were more likely to be simpatize with the *status quo* or that they would have feared that “not participating” put them at risk of losing their job had the revolution failed.

Third, the share of votes for Yanukovych (*bll*) explains all regional differences that were previously captured by regional dummies. Fourth, the impact of risk tolerance is similar to the “Orange” side, with more risk tolerant individuals being more likely to participate. Finally, indicators of connectivity, such as internet, having a mobile or a landline telephone are not significant determinants of participation in the “Blue” side.

Considering both equations and evaluating the BIC, models (5), (6) and (7) are preferred to the basic model (1). This highlights the role of political preferences (including those represented by the share of votes in the first election), attitudes and perceptions (risk tolerance, life satisfaction) as well as the basic controls involved in equation (1).

### Intensity of Participation

The richness of the political participation module of ULMS allows us to differentiate participants in by their role in the protest. Participants were asked about their role in the protests, with 6 categories of participation (refused answer, does not know and other are additional categories, but few participants opted for these options). Table 5 displays these categories, disaggregating by Blue and Orange participants. According to the Pearson’s  $\chi^2$  test, proportions are similar among these two groups. Because further disaggregation reduces cell sizes for the “Blue” participants, in what follows we carry the analysis by role only for “Orange” side participants.

[Insert Table 5 here]

We group the 6 categories into two main groups of participants, “followers” and “organizers”, with organizers being those who considered themselves “very active participant”, “being part of the organizational team” and “being a leading organizer”. Figure 6 shows the grouping for “Orange” participants in these two categories (i.e. followers, organizers).

[Insert Figure 6 here]

To identify determinants that select individuals into these groups, we employ a multinomial logit model, with the base category being non-participants, and in which “Blue” participants are excluded from the estimation: integrating them in the baseline category of “non-participants” is not appropriate given the results shown in the previous section.

Table 6 displays the results in two panels. Panel A reports relative risk ratios for being “followers” compared to non-participants, and panel B reports relative risk ratios for “organizers” compared to the same base category.

[Insert Table 6 here]

We start with a basic model displayed in Column (1) and test the role of additional covariates in the same fashion applied for Table 4. Many interesting results emerge comparing results between both panels. Students are more likely to participate as “followers” (with RRR values between 2 and 3), but this does not make them more likely to be “organizers”. Education does not significantly increase the chances of being “followers”, but does increase the chances of being “organizers”. Women are as likely as men to be “followers”, but they are substantially less likely to participate as “organizers”. Finally, political preferences, increases the chances of being “follower” and “organizers”, but its effect is stronger for organizers. In sum, women and students appear to be driving those engaging in moderate participation, whereas to be “organizer” requires political motivation and higher levels of education. Models (5), (6), and (7) appear to better represent trends than the baseline model (1), at least by using the BIC indicator to choose between these models.

### Timing of Participation

Deciding when to participate is another decision that might be taking by a would-be participant. Lohmann (1994) presents evidence on five “cycles” of protests, using information about the number and turnout of protests from pre-unification East Germany (GDR) between January 1989 and September 1990. Her research suggests that “informational cascades” may shape participation dynamics.

Table 7 shows the disaggregation of timing of participation in the ULMS political participation module. There are 5 categories relating to periods before and after the three elections. The relation with the timing of elections is particularly helpful to reduce the potential for

recall bias that may arise if individuals were inquired about specific dates rather than a time window associated with key events. As Table 7 indicates, most participants joined the protests by early December (that is, soon after the second election results were announced).

[Insert Table 7 here]

There is evidence of dissimilarities between “Blue” and “Orange” participants, as attested by Pearson’s  $\chi^2$  test displayed next to the Table. “Orange” protestors were joining the demonstrations right after the second election, whereas “Blue” participants were more likely to be active before the first election (by participating in political rallies or as observer en in the first election) and right before the third election (perhaps to challenge the “Orange” protests right after the second election).

## **6. Conclusion**

This paper represents an empirical account (the first in its nature) of the determinants and intensity of participation in the crucial “Orange” revolution. Our study is unique in that longitudinal data avoids the “ex-post” rationalizations that cross-sectional studies have. The occurrence of the protest (as opposed to a hypothetical situation) allows us to differentiate from studies where the “willingness” to revolt is interpreted *as if* it reflected the decision making process of a citizen confronting the real prospect of a massive protest.

The richness of our dataset allowed us to provide an extensive account of factors involved with participation that are absent in other studies, such as the “intensity” with which participants demonstrated and a very detailed questionnaire that elicits risk attitudes and an in depth account of potential grievances, such as poor labor market outcomes.

Many of our findings resonate with the motto of participants in the protest “Razom nas bahato!” (Together we are many). Coordination mechanisms (the occurrence of protests in densely populated areas, with individuals “connected” to each other) are central to participation in these protests. We also account for differences in the profile of “protestors” (Orange) and “counter-protestors” (Blue), thus we bring a much richer story than in protests that are interpreted as one-sided.

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**Table 1: Definitions and Summary Statistics<sup>3</sup>**

Variable	Definition	Mean	Std. Error of Mean
<b>General Individual and Household Characteristics:</b>			
<i>female</i>	Indicator: Person is female.	0.572	0.495
<i>ukrainian</i>	Indicator: Ukrainian is preferred language. <sup>4</sup>	0.338	0.473
<i>age</i>	Age of a person.	43.54	16.99
<i>student0304</i>	Person has attended an educational institution since April (May, June) 2003. <sup>5</sup>	0.0806	0.272
<i>primedu</i>	Indicator: Primary/ Unfinished Secondary Education <sup>6</sup>	0.246	0.431
<i>gensec</i>	Indicator: General Secondary/ Vocational Education	0.351	0.477
<i>profsec</i>	Indicator: Professional Secondary/ Unfinished Higher	0.251	0.434
<i>highered</i>	Indicator: Higher Education (completed)	0.152	0.359
<i>hhsiz</i>	Number of household members/ all household members currently living with the household.	3.32	1.41
<b>Economic Situation:</b>			
<i>fracunemp9804</i>	Fraction of time 1998-2004 when the person was unemployed		
<i>worked</i>	Indicator: Person had a job in the reference week in 2004. <sup>7</sup>	0.493	0.500
<i>emppublic</i>	Indicator: Person employed in public sector in 2004(budgetary organization, state or local public enterprise).	0.167	0.373
<i>ownshouse</i>	Indicator: House owner in 2004	0.624	0.484
<i>ownsmore</i>	Household owns a dacha, garden, garden cottage, summer house or another house, apartment or part of an apartment.	0.0947	0.293
<i>unemp</i>	Person did not work during reference week in 2004, but was looking for a job during last four weeks (was engaged in job seeking or planning to start own enterprise or farm)	0.0816	0.274

<sup>3</sup> Unless otherwise specified, information was collected in the wave implemented in 2004.

<sup>4</sup> The person reports speaking Ukrainian (either only Ukrainian or more often than Russian) or reports using both languages (i.e. Ukrainian and Russian) equally, but replies in Ukrainian.

<sup>5</sup> Person attended an “educational institution” between may/june 2003 and the date of the interview (2004).

<sup>6</sup> These categories follow the classification given in Kupets (2006).

<sup>7</sup> During the last week, the person a) worked at least one hour and was paid (in money or in kind), b) was employed in entrepreneurship, business activities, individual work, worked on a family enterprise or on a farm, as a freelancer or as a registered entrepreneur, c) had a job or own business in the last week at which was temporarily absent or not employed (due to illness, vacations, training, maternity or parental leave, or any other reason, or e) was engaged in producing agricultural and other products for sale).

<i>poorpr</i>	Person is 'poor' (using regional food poverty line) <sup>8</sup>	0.216	0.411
<i>poorfr</i>	Person is 'food poor' (using regional food poverty line)	0.0550	0.228
<i>pensshare</i>	Share of pensioners in household (females ages 55+, males ages 60+)	0.255	0.349
<i>workageshare</i>	Share of working age adults (females:15-55, males 15-60) in household.	0.647	0.340
<i>jobprobl12M</i>	Person was unemployed, had delayed wage payments (arrears) or was on forced leave in last 12months	0.223	0.417
<i>jobprobl12Mhh</i>	At least one person in the household was unemployed, had delayed wage payments (arrears) or was on forced leave in last 12months	0.423	0.494
<i>jobslost8697</i>	cumulative number of events where individual lost job involuntarily (closingdown of plan/reorganization, bankruptcy/privatization/dismissed/personnel reduction/expiring contract or probation time), based on retrospective questionnaire between 1986 and 1997	0.215	0.482

#### Individual Preferences and Satisfaction:

<i>suitcentral</i>	Indicator: Economic system desired for Ukraine is "Centrally-planned economy which was in our country until perestroika" or "Centrally-planned economy, but with elements of a market economy". Interview held in 2004. <sup>9</sup>	0.536	0.499
<i>suitmarket</i>	Indicator: Economic system desired for Ukraine is "Market economy with strong government regulation", "Market economy with relatively small government interventions" or "Free market economy". Interview held in 2004.	0.415	0.493
<i>westdem</i>	Indicator: Political system desired is „Western-type democracy“ <sup>10</sup>	0.314	0.464
<i>jobsatplus</i>	Indicator: Person is "satisfied" or "fully satisfied" with job. <sup>11</sup>	0.178	0.382

#### Social Connectivity/ Integration

<i>socialexchange</i>	Index of social exchange (index taking values 0,1,2) as follows: Index=1 if the household has either a) received gifts or money or b) gave money / gifts (to friends, relatives or 'other people' that do not belong to the	0.851	0.863
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<sup>8</sup> Poverty indicators are taken from Brück et. al. (2008) See contextual information, methodology, and references listed therein.

<sup>9</sup> Based on the question: "What kind of economic system, in your opinion, is most suitable for Ukraine?." Answers possible were "centrally-planned economy which was in our country until Perestroika", "centrally-planned economy, but with elements of a market economy", "the economic system which exists today", "market economy with strong government regulation" "market economy with relatively small government interventions" and "free market economy without government regulation", "other", "does not know", and "refuses to answer".

<sup>10</sup> Based on the question: "What kind of political system would you like your children to live under?" Answers possible were "The Soviet system which was in our country until Perestroika", "The Soviet system, but in a different, more democratic form", "The political system which exists today", "Western-type democracy", "Other", "does not know", and "refuses to answer".

<sup>11</sup> Based on the question: "Tell me, please" how satisfied are you with your current job?" Possible answers are "Fully satisfied", "Satisfied", "Rather satisfied", "Less than satisfied" "Not satisfied at all", "does not know", and "refuses to answer".

	household or in donations) Index=2 if the household met criteria a) and b) Index=0 if the household does neither meet criteria a) nor b).		
<i>internet</i>	Indicator: Person used internet in last year (from individual questionnaire)" <sup>12</sup>	0.0597	0.237
<i>fixedtel</i>	Person has a telephone at home in his/her household.	0.355	0.478
<i>mobile</i>	Person has a mobile phone at home in his/her household.	0.129	0.335

## Geography

<i>town</i>	Person lives in a town (urban settlement with less than 100000 inhabitants).	0.187	0.390
<i>city</i>	Person lives in a city (urban settlement with more than 100000 inhabitants).	0.275	0.447
<i>West</i>	Person lives in the 'West' of Ukraine. The category refers to the following <i>oblasti</i> : Volynska, Zakarpatska, Ivano-Frankivska, Lvivska, Rivenska, Ternopil'ska, Khmelnytska and Chernivetska.	0.156	0.363
<i>East</i>	Person lives in the 'East' of Ukraine. This category refers to the following <i>oblasti</i> : Donetsk, Luhanska and Kharkivska.	0.172	0.378
<i>South</i>	Person lives in the 'South' of Ukraine. This category refers to the following <i>oblasti</i> : Autonomous Republic of Crimea, Dnipropetrovska, Zaporizhska, Mykolayevska, Odeska, Khersonska.	0.165	0.372
<i>Kiev</i>	Person lives in Kiev city.	0.033	0.178
<i>Center</i>	Person lives in the 'Center' of Ukraine. This category refers to the following <i>oblasti</i> : Kyivska, Vinnytska, Zhytomyrska, Kirovohradska, Poltav'ska, Sumska, Cherkasska, Chernigiv'ska.	0.188	0.390

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Notes: The mean and linearized standard errors are weighted using sampling weights and adjusted for survey design effects. An indicator variable (also known as dummy indicator variable) is such that if the condition in the question is satisfied, the variable takes value 1 and 0 otherwise.

Source: Own calculations based on ULMS dataset.

**Table 2: Type of participation (in percentage points, multiple answers possible)**

<b>Group</b>	<b>“Orange-side” Participants</b>	<b>“Blue-side” Participants</b>	<b>Participants (Orange or Blue)</b>	<b>Test: Orange=Blue <math>P \geq  t </math></b>
I was wearing ribbons, bows, and/or other symbols.	53.7%	26.6%	49.5%	0.000***
I distributed information materials, stickers, etc.	15.8%	20.0%	16.5%	0.479
I attended meetings, gatherings, pickets, etc.	73.0%	61.9%	71.3%	0.117
I supported my side by giving money.	7.4%	1.4%	6.5%	0.012**
I supported my side by supplying them with food or other resources.	5.8%	0.4%	5.0%	0.001***
I participated in seizures and/or blockades of governmental buildings.	2.1%	0.0%	1.8%	0.064*
I was an official election observer.	6.4%	20.0%	8.5%	0.021**
I camped on public places.	1.7%	8.0%	2.7%	0.077*
OTHER	3.6%	2.4%	3.5%	0.504

*Note:* N= 388 Proportions calculated using sampling weights. \* denotes significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

*Source:* ULMS data and own calculations.

**Table 3: Summary Statistics of Key Variables by Participation Status**

<b>Variable Name</b>	<b>Mean Non- Participants (1)</b>	<b>Mean Orange (2)</b>	<b>Mean Blue (3)</b>	<b>Test (1)=(2)</b>	<b>Test (1)=(3)</b>	<b>Test (2)=(3)</b>
female	0.556	0.542	0.612	0.695	0.760	0.666
age	4.566	4.000	4.195	0.000***	0.679	0.142
educ	5.646	6.929	6.186	0.000***	0.018**	0.011**
student0304	0.099	0.222	0.087	0.000***	0.894	0.029**
worked	0.550	0.624	0.585	0.028**	0.598	0.591
unemp	0.079	0.078	0.154	0.945	0.127	0.151
suitcentral	0.549	0.255	0.516	0.000***	0.738	0.015**
suitmarket	0.399	0.712	0.462	0.000***	0.528	0.022**
lifesatplus	0.273	0.462	0.256	0.000***	0.792	0.005***
jobsatplus	0.278	0.354	0.228	0.020**	0.551	0.085*
ukrainian	0.454	0.698	0.217	0.000***	0.001***	0.000***
emppublic	0.267	0.377	0.430	0.002***	0.017**	0.468
internet	0.078	0.251	0.059	0.000***	0.638	0.000***
socialexchange	0.417	0.437	0.603	0.642	0.402	0.332
ownshouse	0.866	0.888	0.857	0.232	0.646	0.857
ownsmore	0.141	0.203	0.083	0.143	0.163	0.043**
fixedtel	0.489	0.758	0.361	0.000***	0.183	0.000***
mobile	0.175	0.301	0.195	0.003***	0.613	0.154
poorpr	0.208	0.155	0.152	0.035**	0.252	0.837
poorfr	0.055	0.046	0.067	0.367	0.920	0.676
hhsiz	3.337	3.526	3.300	0.076*	0.984	0.346
pensshare	0.224	0.122	0.110	0.000***	0.010**	0.916
workageshare	0.635	0.726	0.770	0.000***	0.014**	0.710
town	0.271	0.313	0.309	0.321	0.465	0.989
city	0.402	0.502	0.308	0.025**	0.317	0.034**
West	0.196	0.458	0.054	0.000***	0.000***	0.000***
East	0.227	0.011	0.574	0.000***	0.000***	0.000***
South	0.254	0.098	0.183	0.000***	0.334	0.157
Kiev	0.055	0.185	0.039	0.000***	0.631	0.001***

Notes: \* denotes significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Source: Own calculations based on ULMS dataset.

**Table 4 Multinomial Logit of Participation by Side (Orange, Blue)**  
**Panel A: Equation for “Orange”side (Omitted category: Non-participating)**  
**relative risk ratios (rrr) displayed**

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
worked	0.87 [0.140]	0.859 [0.138]	0.858 [0.141]	0.842 [0.137]	0.917 [0.183]	0.901 [0.147]	0.866 [0.142]	0.821 [0.130]
student0304	2.298*** [0.700]	2.302*** [0.700]	2.277*** [0.695]	2.234*** [0.677]	2.576*** [0.935]	2.148** [0.656]	2.191** [0.675]	2.049** [0.624]
unemp	0.519* [0.192]	0.574 [0.216]	0.469* [0.206]	0.530* [0.196]	0.476 [0.243]	0.510* [0.197]	0.591 [0.214]	0.508* [0.193]
age	1.056 [0.0435]	1.064 [0.0441]	1.045 [0.0440]	1.038 [0.0450]	1.082 [0.0603]	1.065 [0.0438]	1.073* [0.0451]	1.065 [0.0452]
age2	0.999* [0.000438]	0.999** [0.000443]	0.999 [0.000447]	0.999 [0.000461]	0.999* [0.000584]	0.999** [0.000436]	0.999** [0.000447]	0.999** [0.000453]
educ	0.99 [0.139]	0.994 [0.141]	0.986 [0.140]	0.99 [0.139]	0.906 [0.153]	0.935 [0.133]	1.016 [0.147]	0.945 [0.133]
educ2	1.015 [0.0107]	1.014 [0.0109]	1.016 [0.0109]	1.015 [0.0107]	1.017 [0.0130]	1.017 [0.0110]	1.011 [0.0110]	1.016 [0.0109]
female	0.85 [0.123]	0.832 [0.121]	0.857 [0.124]	0.839 [0.121]	0.886 [0.153]	0.884 [0.130]	0.951 [0.144]	0.855 [0.123]
ukrainian	1.890*** [0.419]	1.862*** [0.415]	1.917*** [0.427]	1.859*** [0.412]	2.015** [0.554]	1.429 [0.350]	2.187*** [0.528]	1.951*** [0.447]
town	2.442*** [0.653]	2.435*** [0.649]	2.472*** [0.662]	2.392*** [0.635]	2.627*** [0.791]	2.194*** [0.597]	2.600*** [0.702]	2.164*** [0.586]
city	2.196*** [0.566]	2.202*** [0.569]	2.215*** [0.573]	2.171*** [0.557]	2.253** [0.712]	2.807*** [0.728]	2.273*** [0.614]	1.663* [0.458]
Kiev	45.78*** [36.77]	44.85*** [36.01]	45.65*** [36.73]	44.93*** [36.14]	38.61*** [40.27]	0.776 [1.147]	49.11*** [39.41]	36.14*** [29.01]
Center	14.84*** [11.79]	14.87*** [11.83]	14.77*** [11.73]	14.80*** [11.78]	17.83*** [18.41]	0.729 [0.989]	13.27*** [10.52]	13.52*** [10.74]
West	35.56*** [28.18]	36.48*** [28.86]	35.57*** [28.23]	36.07*** [28.61]	35.43*** [36.61]	0.283 [0.405]	33.05*** [26.15]	30.60*** [24.16]
South	7.709** [6.297]	7.796** [6.365]	7.665** [6.262]	7.799** [6.366]	7.732* [8.103]	3.31 [3.562]	6.482** [5.277]	7.148** [5.819]
poorpr		0.749 [0.227]						
fracunemp9804		0.51 [0.228]						
jobprobl12M			1.098 [0.287]					
jobslost8697			1.241 [0.200]					
emppublic				1.279 [0.226]				
westdem					2.258*** [0.461]			
suitmarket					1.374 [0.313]			
or1						1.069** [0.0315]		
bl1						0.993 [0.0380]		
lifesatplus							1.662*** [0.289]	
ownshouse							1.61 [0.543]	
risktolerance							1.169** [0.0713]	
risktoleranceunk							0.78 [0.252]	
internet								1.349 [0.350]
fixedtel								1.850*** [0.419]
mobile								1.355 [0.350]
Constant	0.000456*** [0.000546]	0.000447*** [0.000544]	0.000535*** [0.000643]	0.000631*** [0.000765]	0.000198*** [0.000316]	0.000412** [0.00138]	0.000109*** [0.000139]	0.000399*** [0.000487]
Observations	4999	4987	4999	4999	3476	4890	4892	4999
seudo Rsquare	0.175	0.179	0.177	0.178	0.22	0.207	0.198	0.184
log-likelihood	-1192	-1186	-1190	-1188	-836.7	-1139	-1138	-1179
ars estimated (	30	34	34	32	34	34	38	36
BIC	2639.51	2661.50	2669.58	2648.54	1950.62	2566.83	2598.82	2664.61

**Panel B: Equation for “Blue”side (Omitted category: Non-participating), rrr displayed**

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
worked	1.011 [0.317]	0.956 [0.304]	1.098 [0.340]	0.859 [0.274]	1.095 [0.386]	1.012 [0.321]	1.011 [0.321]	1.013 [0.319]
student0304	0.537 [0.346]	0.517 [0.336]	0.557 [0.363]	0.531 [0.343]	0.788 [0.440]	0.533 [0.357]	0.521 [0.327]	0.554 [0.355]
unemp	1.894 [0.849]	2.374** [1.021]	3.162* [2.207]	1.958 [0.873]	2.077 [1.085]	2.047 [0.920]	2.099* [0.927]	1.927 [0.862]
age	0.919 [0.0621]	0.937 [0.0644]	0.938 [0.0678]	0.884* [0.0590]	0.954 [0.0643]	0.918 [0.0623]	0.908 [0.0625]	0.916 [0.0633]
age2	1.001 [0.000715]	1 [0.000728]	1.001 [0.000763]	1.001* [0.000705]	1 [0.000721]	1.001 [0.000719]	1.001 [0.000727]	1.001 [0.000729]
educ	3.778*** [1.394]	3.919*** [1.461]	3.811*** [1.404]	3.646*** [1.345]	3.228*** [1.356]	3.605*** [1.326]	4.021*** [1.530]	3.785*** [1.389]
educ2	0.909*** [0.0259]	0.906*** [0.0260]	0.908*** [0.0257]	0.910*** [0.0258]	0.919*** [0.0298]	0.914*** [0.0257]	0.903*** [0.0270]	0.910*** [0.0255]
female	1.337 [0.428]	1.377 [0.447]	1.358 [0.435]	1.341 [0.434]	1.223 [0.485]	1.358 [0.439]	1.574 [0.505]	1.341 [0.428]
ukrainian	0.539 [0.263]	0.509 [0.255]	0.522 [0.261]	0.552 [0.266]	0.527 [0.289]	0.682 [0.341]	0.578 [0.297]	0.549 [0.272]
town	0.564 [0.261]	0.57 [0.265]	0.564 [0.260]	0.551 [0.252]	0.437* [0.211]	0.526 [0.247]	0.507 [0.254]	0.572 [0.260]
city	0.298** [0.151]	0.293** [0.149]	0.296** [0.149]	0.304** [0.151]	0.164*** [0.0940]	0.290** [0.149]	0.264** [0.146]	0.303** [0.142]
Kiev	0.481 [0.336]	0.461 [0.324]	0.482 [0.339]	0.474 [0.332]	0.338 [0.315]	3.302 [4.749]	0.5 [0.355]	0.538 [0.370]
Center	0.236*** [0.0987]	0.240*** [0.100]	0.238*** [0.0996]	0.237*** [0.101]	0.205*** [0.101]	1.201 [0.949]	0.196*** [0.0794]	0.242*** [0.101]
West	0.125** [0.107]	0.130** [0.112]	0.126** [0.108]	0.126** [0.109]	0.0772* [0.108]	0.704 [1.558]	0.104*** [0.0891]	0.127** [0.111]
South	0.280*** [0.120]	0.281*** [0.121]	0.284*** [0.121]	0.291*** [0.123]	0.181*** [0.0953]	0.654 [0.321]	0.241*** [0.114]	0.291*** [0.126]
poorpr		0.625 [0.262]						
fracunemp9804		0.191* [0.173]						
jobprobl2M			0.595 [0.356]					
jobslost8697			0.742 [0.251]					
emppublic				2.113*** [0.574]				
westdem					1.563 [0.857]			
suitmarket					1.123 [0.450]			
or1						1.022 [0.0463]		
bl1						1.050* [0.0267]		
lifesatplus							0.879 [0.296]	
ownshouse							1.046 [0.419]	
risktolerance							1.377*** [0.129]	
risktoleranceunk							0.754 [0.482]	
internet								0.947 [0.608]
fixedtel								0.766 [0.255]
mobile								1.219 [0.438]
Constant	0.00755*** [0.0117]	0.00600*** [0.00945]	0.00519*** [0.00822]	0.0158*** [0.0244]	0.00753*** [0.0126]	0.000149*** [0.000380]	0.00412*** [0.00747]	0.00771*** [0.0123]
Observations	4999	4987	4999	4999	3476	4890	4892	4999
seudo Rsquar	0.175	0.179	0.177	0.178	0.22	0.207	0.198	0.184
log-likelihood	-1192	-1186	-1190	-1188	-836.7	-1139	-1138	-1179
ers estimated (	30	34	34	32	34	34	38	36
BIC	2639.51	2661.50	2669.58	2648.54	1950.62	2566.83	2598.82	2664.61

**Table 5 Multinomial Logit of Participation Intensity (Orange side)****Panel A: Equation for “Participating, but not actively” (Omitted category: Non-participating)**  
**relative risk ratios**

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
worked	0.818	0.813	0.797	0.785	0.776	0.857	0.833	0.769
student0304	[0.155] 2.796*** [0.887]	[0.152] 2.795*** [0.881]	[0.154] 2.780*** [0.884]	[0.151] 2.687*** [0.846]	[0.184] 3.763*** [1.461]	[0.163] 2.616*** [0.844]	[0.161] 2.678*** [0.816]	[0.144] 2.460*** [0.819]
unemp	0.536	0.594	0.453*	0.55	0.382*	0.53	0.634	0.52
age	[0.213] 1.095**	[0.237] 1.102**	[0.216] 1.086*	[0.218] 1.072	[0.219] 1.146**	[0.215] 1.104**	[0.251] 1.113**	[0.210] 1.103**
age2	[0.0500] 0.999**	[0.0498] 0.999***	[0.0508] 0.999**	[0.0517] 0.999*	[0.0740] 0.998**	[0.0505] 0.999***	[0.0516] 0.999***	[0.0512] 0.999**
educ	[0.000482] 1.127	[0.000480] 1.137	[0.000493] 1.122	[0.000508] 1.127	[0.000671] 1.064	[0.000479] 1.05	[0.000493] 1.153	[0.000491] 1.066
educ2	[0.194] 1.006	[0.200] 1.005	[0.195] 1.006	[0.194] 1.005	[0.216] 1.005	[0.178] 1.009	[0.202] 1.002	[0.184] 1.007
female	[0.0129] 1.011	[0.0132] 0.994	[0.0131] 1.022	[0.0129] 0.995	[0.0154] 0.921	[0.0129] 1.065	[0.0132] 1.068	[0.0132] 1.014
ukrainian	[0.168] 1.668**	[0.168] 1.650**	[0.171] 1.685**	[0.167] 1.628**	[0.185] 1.763**	[0.180] 1.189	[0.181] 1.897***	[0.168] 1.709**
town	[0.376] 2.853***	[0.371] 2.872***	[0.381] 2.883***	[0.367] 2.785***	[0.470] 2.944***	[0.298] 2.582***	[0.462] 2.795***	[0.399] 2.469***
city	[0.894] 2.172***	[0.902] 2.171***	[0.906] 2.188***	[0.866] 2.141***	[1.050] 2.391**	[0.814] 2.956***	[0.890] 2.148**	[0.771] 1.619
Kiev	[0.644] 75.07***	[0.643] 73.94***	[0.650] 75.60***	[0.631] 73.40***	[0.865] 81.56***	[0.889] 0.605	[0.673] 75.90***	[0.515] 56.97***
Center	[56.74] 19.67***	[55.92] 19.62***	[57.24] 19.64***	[55.63] 19.62***	[84.82] 34.06***	[0.970] 0.572	[57.66] 18.21***	[42.91] 17.42***
West	[14.75] 42.12***	[14.73] 42.68***	[14.73] 42.35***	[14.74] 42.90***	[35.26] 56.89***	[0.830] 0.113	[13.70] 38.35***	[13.07] 35.07***
South	[31.64] 7.335**	[32.02] 7.363**	[31.86] 7.278**	[32.22] 7.447**	[58.72] 8.261**	[0.184] 2.876	[28.85] 5.446**	[26.22] 6.600**
poorpr	[5.873] 0.868	[5.898] 0.868	[5.835] 0.868	[5.950] 0.868	[8.853] 0.868	[3.243] 0.868	[4.365] 0.868	[5.275] 0.868
fracunemp9804	[0.281] 0.484	[0.281] 0.484	[0.258] 0.484	[0.258] 0.484	[0.258] 0.484	[0.258] 0.484	[0.258] 0.484	[0.258] 0.484
jobprobl12M				1.186				
jobslost8697			[0.344]	1.19				
emppublic			[0.225]		1.342			
westdem				[0.267]				
suitmarket					1.808**			
or1					[0.420]			
bl1					1.656**			
lifesatplus					[0.415]	1.093**		
ownshouse						[0.0404]		
internet						1.001		
fixedtel						[0.0472]		
mobile							1.959***	
Constant	7.20e-05*** [9.40e-05]	6.90e-05*** [9.10e-05]	8.13e-05*** [0.000106]	0.000109*** [0.000145]	1.42e-05*** [2.62e-05]	2.95e-05*** [0.000113]	2.38e-05*** [3.32e-05]	6.73e-05*** [8.93e-05]
Observations	4963	4951	4963	4963	3449	4851	4857	4963
pseudo Rsquare	0.185	0.188	0.187	0.186	0.233	0.222	0.201	0.197
log-likelihood	-1059	-1054	-1057	-1057	-740.7	-1005	-1020	-1044
parameters estimated	30	34	34	32	34	34	34	36
BIC	2373.29	2397.25	2403.33	2386.31	1758.36	2298.56	2328.60	2394.35



**Panel B: Equation for “Active” participation (Omitted category: Non-participating)**  
**relative risk ratios**

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
worked	0.979 [0.340]	0.943 [0.329]	0.998 [0.340]	0.978 [0.342]	1.441 [0.559]	0.985 [0.344]	1.006 [0.343]	0.92 [0.320]
student0304	1.317 [0.814]	1.323 [0.819]	1.28 [0.784]	1.308 [0.806]	0.956 [0.615]	1.293 [0.795]	1.206 [0.746]	1.167 [0.690]
unemp	0.469 [0.404]	0.506 [0.437]	0.517 [0.485]	0.47 [0.406]	0.882 [0.768]	0.453 [0.401]	0.469 [0.396]	0.472 [0.412]
age	0.958 [0.0966]	0.964 [0.0962]	0.939 [0.0939]	0.957 [0.0989]	0.937 [0.106]	0.971 [0.0992]	0.951 [0.0917]	0.971 [0.104]
age2	1 [0.00110]	1 [0.00109]	1 [0.00109]	1 [0.00113]	1 [0.00123]	1 [0.00111]	1 [0.00105]	1 [0.00117]
educ	0.733 [0.194]	0.719 [0.193]	0.728 [0.195]	0.734 [0.194]	0.661 [0.203]	0.711 [0.190]	0.735 [0.194]	0.724 [0.201]
educ2	1.036* [0.0209]	1.037* [0.0214]	1.037* [0.0212]	1.036* [0.0210]	1.038* [0.0234]	1.037* [0.0209]	1.036* [0.0211]	1.033 [0.0214]
female	0.469** [0.139]	0.453*** [0.133]	0.470** [0.140]	0.469*** [0.138]	0.747 [0.239]	0.481** [0.143]	0.475** [0.144]	0.471** [0.141]
ukrainian	3.458** [1.839]	3.431** [1.813]	3.604** [1.933]	3.456** [1.842]	3.554** [2.183]	2.872* [1.645]	3.287** [1.702]	3.770** [2.008]
town	1.613 [0.668]	1.555 [0.648]	1.643 [0.680]	1.608 [0.669]	2.118* [0.949]	1.454 [0.622]	1.713 [0.714]	1.522 [0.655]
city	2.289** [0.919]	2.311** [0.922]	2.335** [0.931]	2.288** [0.923]	1.994 [0.915]	2.548** [1.000]	2.639** [1.065]	1.752 [0.747]
Kiev	2.276 [3.288]	2.19 [3.164]	2.203 [3.187]	2.283 [3.297]	1.731 [2.540]	0.174 [0.390]	2.275 [3.292]	1.907 [2.759]
Center	5.481 [6.194]	5.502 [6.222]	5.384 [6.084]	5.487 [6.181]	3.489 [4.173]	0.791 [1.475]	5.347 [6.017]	5.224 [5.867]
West	17.80*** [19.25]	18.87*** [20.36]	17.42*** [18.85]	17.75*** [19.25]	10.55** [12.21]	1.101 [2.096]	18.01*** [19.50]	15.57** [16.70]
South	7.851* [8.388]	8.140** [8.695]	7.819* [8.348]	7.849* [8.395]	6.395* [6.935]	4.229 [6.180]	7.345* [7.845]	7.620* [8.126]
poorpr		0.465* [0.201]						
fracunemp9804		0.594 [0.503]						
jobprobl12M			0.88 [0.403]					
jobslost8697			1.529 [0.442]					
emppublic				1.009 [0.360]				
westdem					4.707*** [1.800]			
suitmarket					0.834 [0.342]			
or1						1.031 [0.0440]		
bl1						0.984 [0.0537]		
lifesatplus							0.945 [0.335]	
ownshouse							2.599 [1.554]	
internet								1.829 [0.767]
fixedtel								1.257 [0.414]
mobile								1.801 [0.720]
Constant	0.00573** [0.0118]	0.00677** [0.0139]	0.00803** [0.0165]	0.00582** [0.0120]	0.00707** [0.0163]	0.0123 [0.0636]	0.00294*** [0.00614]	0.00396** [0.00877]
Observations	4963	4951	4963	4963	3449	4851	4857	4963
seuso Rsquare	0.185	0.188	0.187	0.186	0.233	0.222	0.201	0.197
log-likelihood	-1059	-1054	-1057	-1057	-740.7	-1005	-1020	-1044
ers estimated (	30	34	34	32	34	34	34	36
BIC	2373.29	2397.25	2403.33	2386.31	1758.36	2298.56	2328.60	2394.35

Notes: participants on “Blue” side are excluded in the estimation.

**Table 6: Function in the Political Activities of participation**

Question: Tell me, please, how would you describe your function in the political activities?

Group	“Orange-side” Participants	“Blue-side” Participants	Participants (Orange or Blue)
Refused to answer	1.2%	0.00%	1.1%
Doesn’t know	2.5%	2.8%	2.5%
I was a leading organizer.	0.5%	0.00%	0.4%
I belonged to the organization team.	4.8%	4.6%	4.8%
I was a very active participant.	17.4%	17.3%	17.4%
I was a regular participant.	20.1%	15.8%	19.4%
I participated, but more as a reserved participant.	48.2%	57.9%	49.7%
I supported the organizers and protested.	4.7%	0.0%	3.9%
OTHER	0.7%	1.6%	0.9%
N=	315	74	389

*Note:* Proportions calculated using sampling weights.

Uweighted test of equality of proportions, Pearson  $\chi^2(8) = 77.403$  Pr=0.459

**Table 7: Beginning of Participation**

Question: Please try to remember when you started participating in these political activities

	<b>Orange</b>	<b>Blue</b>	<b>Total</b>
RA	1.45	0.00	1.22
DS	15.24	13.13	14.91
Person started participating...			
...before the first election round (before 31 <sup>st</sup> October 2004)	18.65	24.18	19.52
...between the first and the second election (1 <sup>st</sup> November 2004-21 <sup>st</sup> November 2004)	23.58	19.26	22.90
...soon after the second election round (22 <sup>nd</sup> November 2004-8 <sup>th</sup> December 2004)	27.59	21.44	26.62
...soon before the third election round (9 <sup>th</sup> December 2004-26 <sup>th</sup> December 2004)	11.96	20.13	13.24
...after the third election round (after 26 <sup>th</sup> December 2004)	1.53	1.86	1.59
N=	309	74	383

Pearson  $\chi^2(6)=114.205$  Pr = 0.076

Figure 1

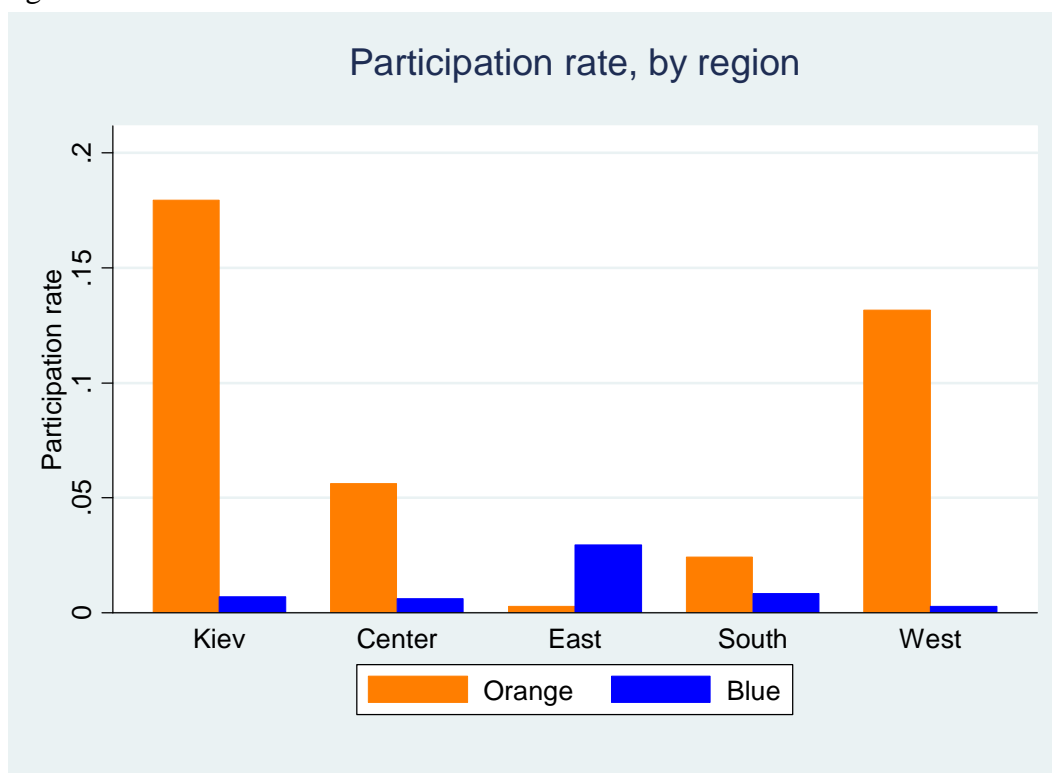
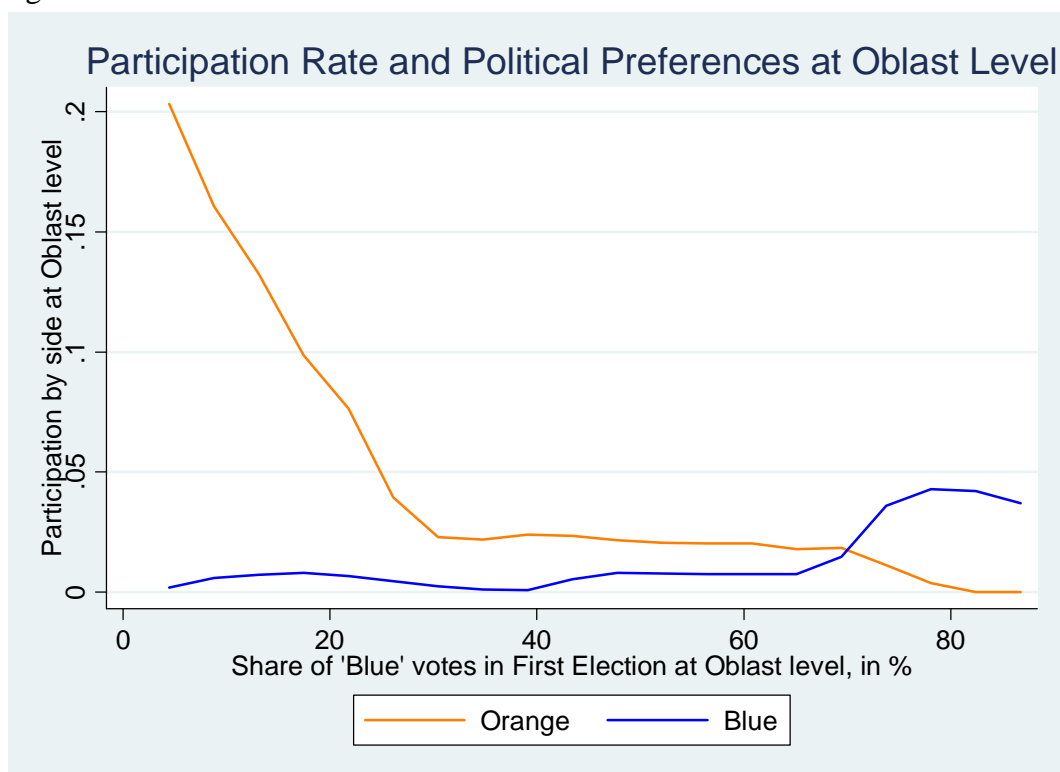


Figure 2



Notes: Kernel-weighted local polynomial smoothing, kernel bandwidth =5, kernel points=20.1

Figure 3

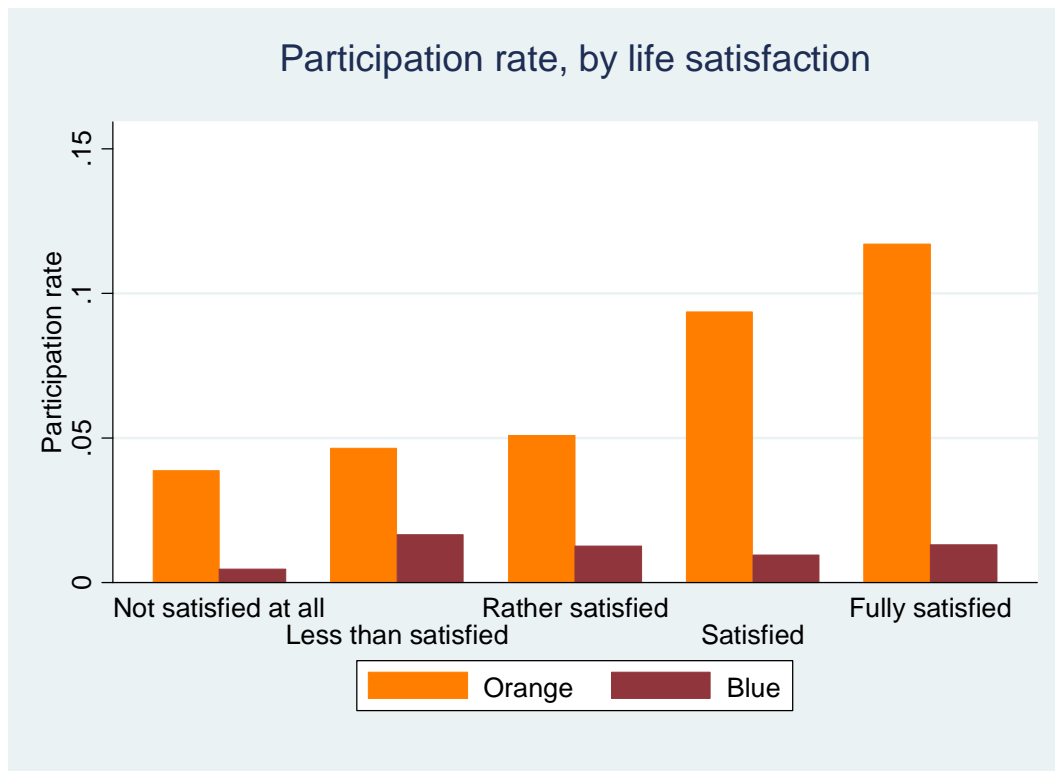
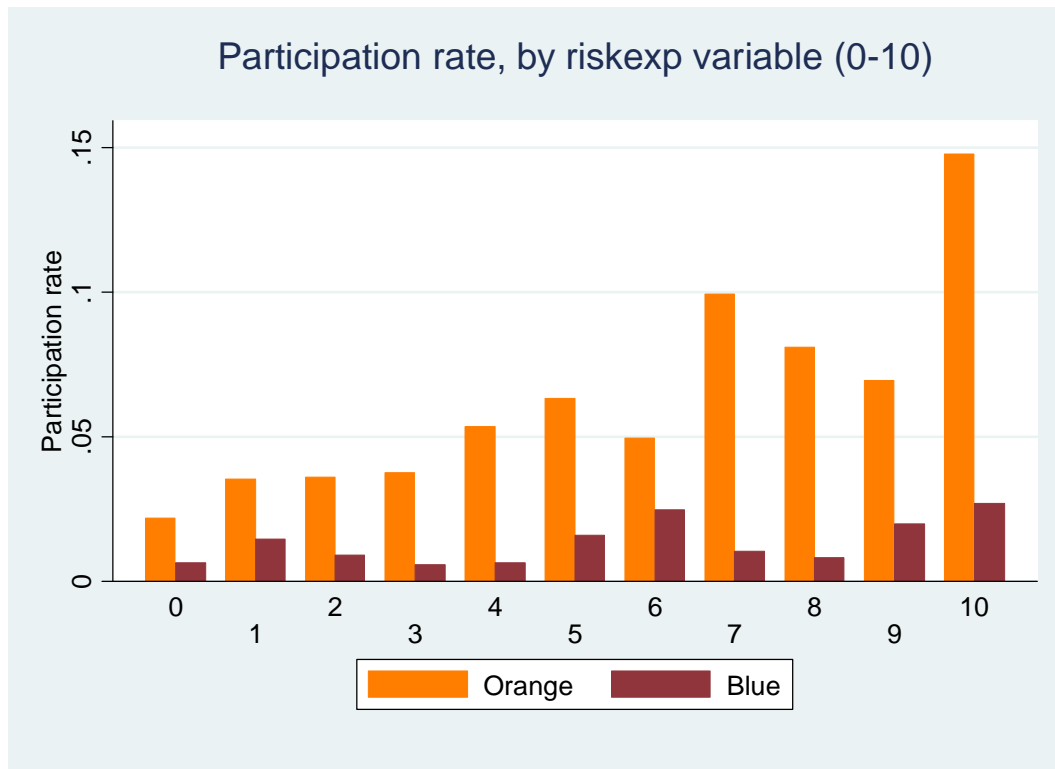
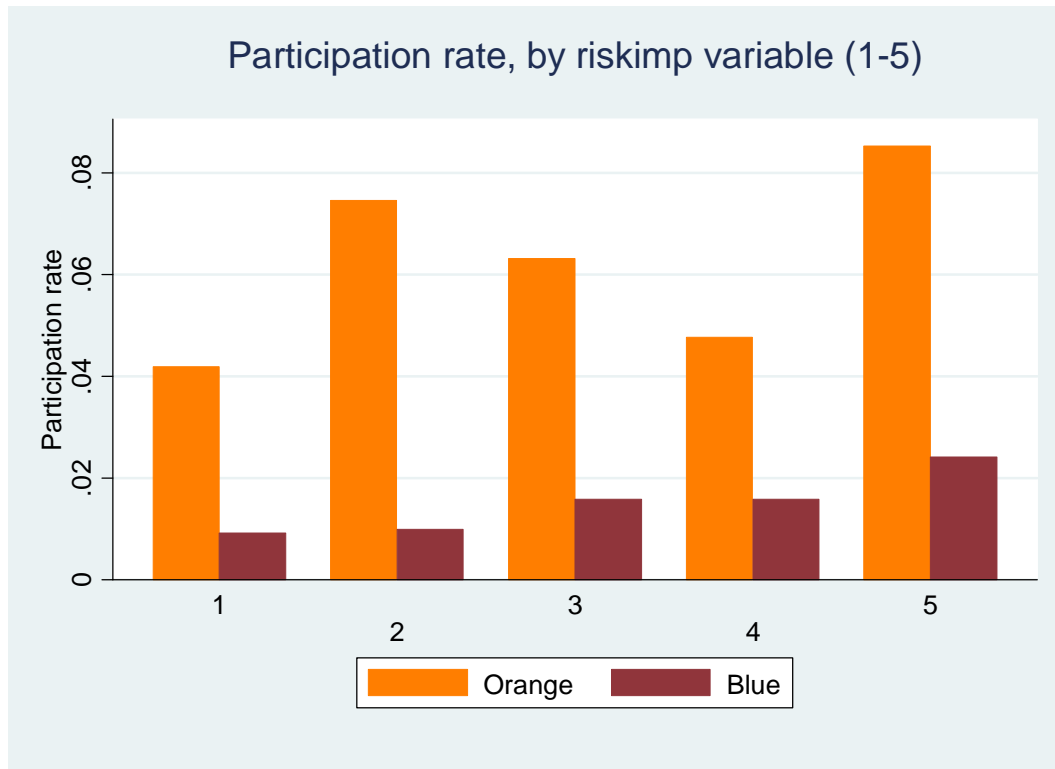


Figure 4



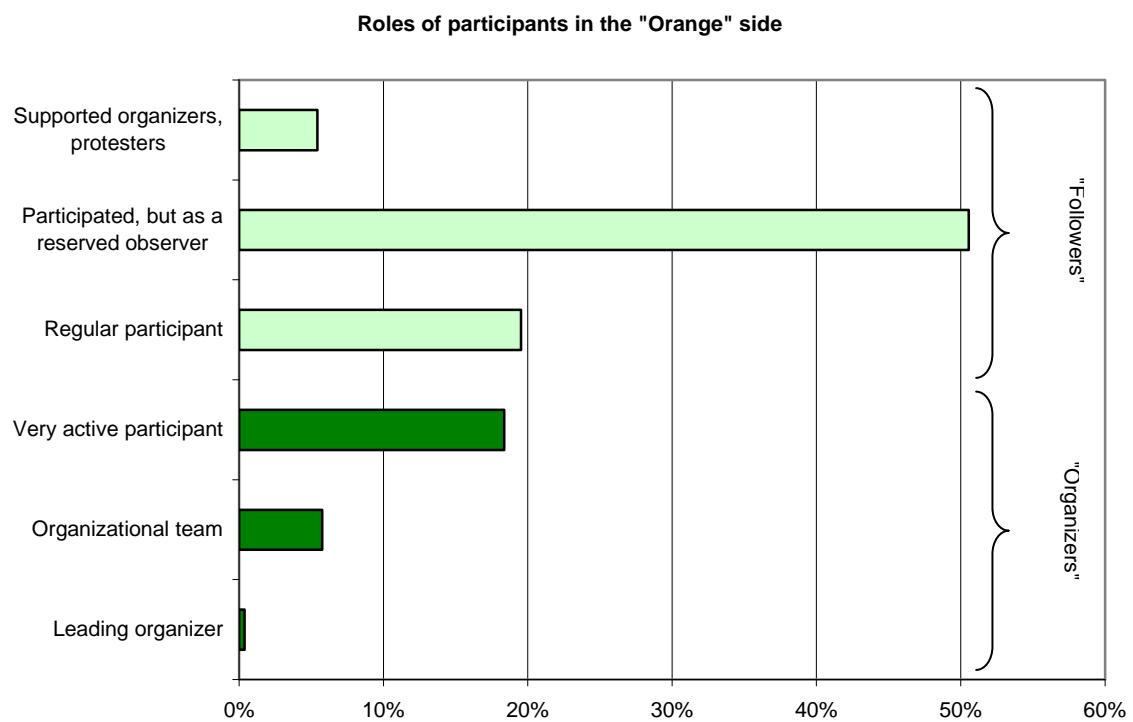
Notes: See description of risk taking assessments on Appendix 1

Figure 5



Notes: See description of risk taking assessments on Appendix 1

Figure 6



## Appendix 1: Risk taking assessment

We measure attitudes toward risk implicitly and explicitly by using information on a module employed to measure risk taking behavior.

An explicit measure of risk aversion is captured by the variable “*riskexp*”. It is based a scale of willingness to take risks (in general). Specifically, the question to elicit these preferences is as follows:

*“How do you see yourself? Are you generally a person who is fully willing to take risks or do you try to avoid taking risks? Please give me a number from 0 to 10, where the value 0 means: “Completely unwilling to take risks” and the value 10 means: “Completely willing to take risks”. You can use the values in between to make your estimate.”*

We also rely on an implicit measure of risk aversion, elicited by asking individuals to decide between different lotteries. Specifically, the question is as follows:

*“Imagine you are a participant in a quiz show and win a prize. This prize offers you the choice between two payment options: You can either take a sure payment or you can flip a coin and win either 200 Hryvnias if heads come up and receive nothing if tails comes up.*

*Please consider the table below. In each row you are offered a choice between a different sure payment (option A) and the coin flip (option B). Please indicate which option you would prefer in each row.*

*How would you decide between ...”*

	option A		option B	
1	1 sure payment of 40 Hryvnias	OR	2 winning 200 Hryvnias with 50% probability and nothing with probability 50%	__
2	1 sure payment of 70 Hryvnias	OR	2 winning 200 Hryvnias with 50% probability and nothing with probability 50%	__
3	1 sure payment of 100 Hryvnias	OR	2 winning 200 Hryvnias with 50% probability and nothing with probability 50%	__
4	1 sure payment of 130 Hryvnias	OR	2 winning 200 Hryvnias with 50% probability and nothing with probability 50%	__

Participants are also allowed to refuse answering or answer “Don’t know”.

Based on these four questions (rows 1 to 4), we create a variable *riskimp* that can take five values as follows:

*riskimp*=1 if response for question 1 is option A (lowest level of tolerance among respondents).

*riskimp* =2 if response in question 1 is option B, but option A is chosen in question 2.

*riskimp* =3 if response for questions 1 and 2 is option B, but option A is chosen for question 3.

*riskimp* =4 if response for questions 1, 2 and 3 is option A, but option A is chosen for question 4.

*riskimp* =5 if response for questions 1,2, 3 and 4 is always option B (highest level of risk tolerance among respondents).